Space Weather Forecast

Issued on Friday 14 February 2025 at 01:19 Local

This forecast provides a four-day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Chance of Minor Geomagnetic Storm (G1) and chance of Minor Radio Blackouts (R1).

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity reached Moderate levels, with a low level Moderate class flare at 13/1109UTC from a region in the southwest. There are currently ten sunspot regions on the visible disc, of these eight are numbered. AR3990 and AR3992 produced the largest flares of the period, both moderately sized but one with moderate magnetic complexity. The remaining regions on the visible disc are either small and weak, or larger and stable.

No Earth-directed CMEs were observed in available imagery.

Solar Wind / Geomagnetic Activity: Solar winds showed a gradual increase, starting the period at Slightly Elevated levels around 450 km/s and ended at Elevated levels around 500-550 km/s, most likely due to a gradual connection to the fast stream from a large coronal hole feature. The strength of the solar wind's magnetic field was predominantly Weak, but did briefly reach Moderate levels. The important north-south component of the solar wind fluctuated weakly, but was mostly negative/southward.

The net result of the above solar wind measures was for Unsettled to Active geomagnetic activity.

Energetic Particles / Solar Radiation: No solar radiation storms were observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Activity will most likely be Low, but with a daily chance of isolated Moderate-class X-ray flares.

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs. Current fast winds are expected to become further enhanced in the remainder of day 1 (14 February), reaching Elevated to Strong speeds.Little change is expected through day 2 and 3 (15th and 16th) with possibly a gradual decline through day 4 (17th) to become Slightly Elevated to Elevated again.

Predominantly Unsettled to Active geomagnetic conditions are expected, with isolated Minor geomagnetic storm intervals likely, especially during day 1 UTC night time period. Day 4 (17th) geomagnetic conditions may decrease to become Quiet to Unsettled.

Issued by Met Office Space Weather Advisor, Tel: +44 (0) 370 900 0100 Email: enquiries@metoffice.gov.uk

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Energetic Particles / Solar Radiation: Overall the high energy proton flux is forecast to persist at Background levels. However, with one of the moderately sized regions rotating further across the western hemisphere this gives a marginally increased Slight Chance of a S1 event.

Geomagnetic Storms

Geomagnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	50	40	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X-Ray Flares

X-Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 (M Class)	Yes	50	50	50	50
Very Active	R3-R5 (X Class)	No	1	1	1	1

Solar Radiation Storms (High Energy Protons)

Radiation Storms Probability (Exceedance)	Level ($cm^{-2}sr^{-1}s^{-1}$)	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	5	5	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and/or 50 MeV ≥ 10pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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